

IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Original): A process for the preparation of phenol comprising the following phases:

- 1) preparation in continuous of phenol by means of the direct oxidation of benzene with hydrogen peroxide operating with an H_2O_2 /benzene ratio ranging from 10 to 70%, in a three-phase reaction system comprising a first liquid phase consisting of benzene and an organic solvent, a second liquid phase consisting of water, a solid phase consisting of an activated catalyst based on titanium silicalite TS-1;
- 2) separation of the phenol and non-reacted benzene from the reaction mixture of the oxidation section (1), by means of fractionated distillation;
- 3) separation of the solvent and by-products consisting of benzenediols from the mixture coming from the distillation tail (2), by means of basic extraction;
- 4) transformation of the by-products obtained in section (3) to phenol by means of hydrodeoxygenation with hydrogen operating in continuous, in aqueous solution, at a temperature ranging from 250 to 500°C, at pressures of 1-100 bar and in the presence of a catalyst based on elements of group VIB or their mixtures or group VIII of the periodic table or their mixtures;
- 5) recycling of the phenol obtained in section (4) to the distillation section (2).

Claim 2 (Original): The process according to claim 1, wherein the direct oxidation of benzene is carried out in a three-phase reaction system comprising a quantity of water ranging from 5 to 50% by weight with respect to the reaction mixture.

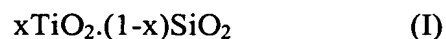
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Claim 3 (Original): The process according to claim 2, wherein the water is present in a quantity ranging from 15 to 40%.

Claim 4 (Original): The process according to claim 1, wherein the direct oxidation of benzene is carried out in a three-phase reaction system comprising an organic solvent consisting of sulfolane, in quantities ranging from 20 to 80% by weight with respect to the reaction mixture.

Claim 5 (Original): The process according to claim 4, wherein the sulfolane is present in quantities ranging from 40 to 70%.

Claim 6 (Original): The process according to claim 1, wherein the direct oxidation of benzene with hydrogen peroxide is carried out in the presence of a catalyst based on titanium silicalite TS-1 selected from those having general formula (I);



wherein: x ranges from 0.0001 to 0.04, preferably from 0.02 to 0.03, in quantities ranging from 2 to 60% by weight with respect to the benzene, activated by means of a pretreatment with fluorine ions and hydrogen peroxide.

Claim 7 (Original): The process according to claim 6, wherein the catalyst is present in quantities ranging from 5 to 40% by weight with respect to the benzene.

Claim 8 (Original): The process according to claim 1, wherein the direct oxidation is carried out in quantities of benzene ranging from 10 to 80% by weight with respect to the reaction mixture.

Claim 9 (Original): The process according to claim 8, wherein the direct oxidation is carried out in quantities of benzene ranging from 15 to 50% by weight with respect to the reaction mixture.

Claim 10 (Original): The process according to claim 1, wherein the oxidation reaction is carried out at temperatures ranging from 50° to 110°C.

Claim 11 (Original): The process according to claim 10, wherein the oxidation reaction is carried out at temperatures ranging from 70° to 100°C.

Claim 12 (Original): The process according to claim 1, wherein the by-products consisting of benzenediols which are transformed into phenol are in aqueous solution at a concentration of 5-60% by weight.

Claim 13 (Original): The process according to claim 12, wherein the benzenediols are in aqueous solution at a concentration of 10-40% by weight.

Claim 14 (Original): The process according to claim 1, wherein the hydrodeoxygenation is effected with hydrogen operating with a molar ratio with respect to the benzenediols of 2-50.

Claim 15 (Original): The process according to claim 14, wherein a molar ratio of 5-30 is adopted with respect to the benzenediols.

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Claim 16 (Original): The process according to claim 1, wherein the hydrodeoxygenation is carried out in the presence of a catalyst based on elements of group VIB and a promoter selected from elements belonging to group VIII and phosphorous.

Claim 17 (Original): The process according to claim 16, wherein the catalyst based on elements of group VIB is selected from molybdenum and tungsten and the promoter is selected from nickel, cobalt, iron and ruthenium.

Claim 18 (Original): The process according to claim 1, wherein the hydrodeoxygenation is carried out in the presence of a catalyst based on elements of group VIII selected from cobalt, palladium, nickel and platinum and a promoter selected from zinc, rhenium, selenium, tin, germanium and lead.

Claim 19 (Original): The process according to claim 1, wherein the hydrodeoxygenation is carried out in the presence of a catalyst deposited on a carrier.

Claim 20 (Original): The process according to claim 19, wherein the carrier is selected from alumina, silica, titanium dioxide, crystalline or amorphous aluminosilicates, crystalline spinels having the general formula $F^{2+}R_2^{3+}O_4$, wherein F^{2+} is selected from Mg, Fe, Zn, Mn, Ni, and R^{3+} is selected from Al, Fe, Cr or their mixtures.

Claim 21 (Currently Amended): The process according to ~~claim 16 and 19~~ claims 16 or 19, wherein the hydrodeoxygenation is carried out in the presence of a catalyst based on an element of group VIB deposited on a carrier at a concentration ranging from 1 to 50% by

weight and a promoter at a concentration ranging from 0.1 to 100% atomic with respect to the element of group VIB.

Claim 22 (Currently Amended): The process according to ~~claim 18 and 19~~ claims 18 or 19, wherein the hydrodeoxygenation is carried out in the presence of a catalyst based on an element of group VIII deposited on a carrier at a concentration ranging from 0.05 to 20% by weight and a promoter at a concentration ranging from 0.5 to 200% atomic with respect to the element of group VIII.

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